Code No: R05320403 **R05** **Set No. 2**

III B.Tech II Semester Examinations,December 2010
MICROWAVE ENGINEERING
Common to Electronics And Telematics, Electronics And Communication Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) A reflex klystron operates with $V_b = 400V$, $R_{sh} = 20k\Omega$, $f = 9GHZ$, $L = 10^{-3}m$. $n = 2$. Find the repeller voltage & electronic efficiency.
   (b) Derive the expressions used in the above problem. [8+8]
2. (a) Draw the field configurations of TM_{11}, TM_{21}, TE_{11} and TE_{21} in circular wave guides.
   (b) An air filled circular wave guide has a radius of 1.5 cm and is to carry energy at a frequency of 10 GHz. Find all TE and TM modes for which transmission is possible. [8+8]
3. (a) Write a short notes on the measurement of impedance using slotted line.
   (b) Write a shot notes on the measurement of Q of a cavity resonator. [8+8]
4. (a) Differentiate between transferred electron devices and transistors.
   (b) Mention the typical characteristics and application of a gunn diode. [8+8]
5. (a) Derive the expression for phase velocity in terms of λo and λc.
   (b) When the dominant mode is propagated in an air filled rectangular wave guide, the guide wave length for a frequency of 9000 MHz is 4 cm. Calculate the breadth of the guide. [8+8]
6. (a) Write short notes on "H-Plane Tee".
   (b) Ten watts is applied to the input of a coupler whose output end is terminated in a matched load. The auxiliary output is found to be 100 milli watts. When 10 watts is applied to the output end of the coupler and the input is terminated in a matched load, the auxiliary output is found to be 10 micro watts. Find both the coupling and directivity. [8+8]
7. (a) What is Faraday rotation? Explain how a three port circulator operates.
   (b) Write short notes on "Properties of S - matrix". [8+8]
8. (a) In a circular Klystron , a=0.10m, b=0.40m, β= 1.0 mT, Vb=5KV. Find the Hulls Cut-off VOltage & cut-off magnetic flux density.
   (b) Compare & contrast TWT & Klystron amplifier. [8+8]

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Code No: R05320403 **R05** **Set No. 4**

III B.Tech II Semester Examinations,December 2010
MICROWAVE ENGINEERING
Common to Electronics And Telematics, Electronics And Communication Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Derive the expression for phase velocity in terms of λo and λc.
   (b) When the dominant mode is propagated in an air filled rectangular wave guide, the guide wave length for a frequency of 9000 MHz is 4 cm. Calculate the breadth of the guide. [8+8]
2. (a) Draw the field configurations of TM_{11}, TM_{21}, TE_{11} and TE_{21} in circular wave guides.
   (b) An air filled circular wave guide has a radius of 1.5 cm and is to carry energy at a frequency of 10 GHz. Find all TE and TM modes for which transmission is possible. [8+8]
3. (a) Write short notes on "H-Plane Tee".
   (b) Ten watts is applied to the input of a coupler whose output end is terminated in a matched load. The auxiliary output is found to be 100 milli watts. When 10 watts is applied to the output end of the coupler and the input is terminated in a matched load, the auxiliary output is found to be 10 micro watts. Find both the coupling and directivity. [8+8]
4. (a) In a circular Klystron , a=0.10m, b=0.40m, β= 1.0 mT, Vb=5KV. Find the Hulls Cut-off VOltage & cut-off magnetic flux density.
   (b) Compare & contrast TWT & Klystron amplifier. [8+8]
5. (a) Write a short notes on the measurement of impedance using slotted line.
   (b) Write a shot notes on the measurement of Q of a cavity resonator. [8+8]
6. (a) What is Faraday rotation? Explain how a three port circulator operates.
   (b) Write short notes on "Properties of S - matrix". [8+8]
7. (a) A reflex klystron operates with $V_b = 400V$, $R_{sh} = 20k\Omega$, $f = 9GHZ$, $L = 10^{-3}m$. $n = 2$. Find the repeller voltage & electronic efficiency.
   (b) Derive the expressions used in the above problem. [8+8]
8. (a) Differentiate between transferred electron devices and transistors.
   (b) Mention the typical characteristics and application of a gunn diode. [8+8]

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Code No: R05320403 **R05** **Set No. 1**

III B.Tech II Semester Examinations,December 2010
MICROWAVE ENGINEERING
Common to Electronics And Telematics, Electronics And Communication Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Write short notes on "H-Plane Tee".
   (b) Ten watts is applied to the input of a coupler whose output end is terminated in a matched load. The auxiliary output is found to be 100 milli watts. When 10 watts is applied to the output end of the coupler and the input is terminated in a matched load, the auxiliary output is found to be 10 micro watts. Find both the coupling and directivity. [8+8]
2. (a) Differentiate between transferred electron devices and transistors.
   (b) Mention the typical characteristics and application of a gunn diode. [8+8]
3. (a) A reflex klystron operates with $V_b = 400V$, $R_{sh} = 20k\Omega$, $f = 9GHZ$, $L = 10^{-3}m$. $n = 2$. Find the repeller voltage & electronic efficiency.
   (b) Derive the expressions used in the above problem. [8+8]
4. (a) In a circular Klystron , a=0.10m, b=0.40m, β= 1.0 mT, Vb=5KV. Find the Hulls Cut-off VOltage & cut-off magnetic flux density.
   (b) Compare & contrast TWT & Klystron amplifier. [8+8]
5. (a) Write a short notes on the measurement of impedance using slotted line.
   (b) Write a shot notes on the measurement of Q of a cavity resonator. [8+8]
6. (a) What is Faraday rotation? Explain how a three port circulator operates.
   (b) Write short notes on "Properties of S - matrix". [8+8]
7. (a) Derive the expression for phase velocity in terms of λo and λc.
   (b) When the dominant mode is propagated in an air filled rectangular wave guide, the guide wave length for a frequency of 9000 MHz is 4 cm. Calculate the breadth of the guide. [8+8]
8. (a) Draw the field configurations of TM_{11}, TM_{21}, TE_{11} and TE_{21} in circular wave guides.
   (b) An air filled circular wave guide has a radius of 1.5 cm and is to carry energy at a frequency of 10 GHz. Find all TE and TM modes for which transmission is possible. [8+8]

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Code No: R05320403 **R05** **Set No. 3**

III B.Tech II Semester Examinations,December 2010
MICROWAVE ENGINEERING
Common to Electronics And Telematics, Electronics And Communication Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) In a circular Klystron , a=0.10m, b=0.40m, β= 1.0 mT, Vb=5KV. Find the Hulls Cut-off VOltage & cut-off magnetic flux density.
   (b) Compare & contrast TWT & Klystron amplifier. [8+8]
2. (a) A reflex klystron operates with $V_b = 400V$, $R_{sh} = 20k\Omega$, $f = 9GHZ$, $L = 10^{-3}m$. $n = 2$. Find the repeller voltage & electronic efficiency.
   (b) Derive the expressions used in the above problem. [8+8]
3. (a) Write short notes on "H-Plane Tee".
   (b) Ten watts is applied to the input of a coupler whose output end is terminated in a matched load. The auxiliary output is found to be 100 milli watts. When 10 watts is applied to the output end of the coupler and the input is terminated in a matched load, the auxiliary output is found to be 10 micro watts. Find both the coupling and directivity. [8+8]
4. (a) Differentiate between transferred electron devices and transistors.
   (b) Mention the typical characteristics and application of a gunn diode. [8+8]
5. (a) Derive the expression for phase velocity in terms of λo and λc.
   (b) When the dominant mode is propagated in an air filled rectangular wave guide, the guide wave length for a frequency of 9000 MHz is 4 cm. Calculate the breadth of the guide. [8+8]
6. (a) Draw the field configurations of TM_{11}, TM_{21}, TE_{11} and TE_{21} in circular wave guides.
   (b) An air filled circular wave guide has a radius of 1.5 cm and is to carry energy at a frequency of 10 GHz. Find all TE and TM modes for which transmission is possible. [8+8]
7. (a) What is Faraday rotation? Explain how a three port circulator operates.
   (b) Write short notes on "Properties of S - matrix". [8+8]
8. (a) Write a short notes on the measurement of impedance using slotted line.
   (b) Write a shot notes on the measurement of Q of a cavity resonator. [8+8]

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